REMARKS

The foregoing amendment is presented concurrently with the filing of a Request for Continued Examination in connection with the above-identified application.

Claim 1 has been amended to specify that the epoxy resin composition of this invention is for encapsulating semiconductors that are used in the so-called area mounting type semiconductor devices. These are formed by mounting semiconductor elements on one side of a printed circuit board or a metallic lead frame and encapsulating with an epoxy resin composition substantially only the side on which the semiconductor elements are mounted. New method Claim 12 is directed to this method. Claims 8, 9, 10 and 11 are directed to further aspects of the present invention.

Of critical importance to obtaining the proper results for this very specialized type of application resides in that the epoxy resin composition must satisfy the expressions, a, b and c as defined in the claims herein. None of the 12 references relied on in the Final Rejection of March 28, 2003 teach, suggest or motivate anyone skilled in the art to select those parameters whereby these desired results are obtained.

Consequently, the rejection of the claims as anticipated under 35 U.S.C. § 102(b), or in the alternative under 35 U.S.C. 103(a), in view of the cited references is traversed. The Official Action relies as evidence of anticipation and/or obviousness on U.S. Patent 5,418,266, Japanese Patents 11-71444, 11-92631, 11-130038, 11-100490 and 11-100491, as well as the patents of *Takami*, *Fujii*, U.S. Patent 6,083,774, *Okuse*, or U.S. Patent 6,139,978 or U.S. Patent 5,827,908. All of the rejections set forth on page 2 of the Final Rejection are traversed and reconsideration is respectfully requested. As described in the application, the epoxy resin composition of the present invention is used for the so-called area mounting type semiconductor devices formed by mounting semiconductor elements on one side of a printed circuit board or a metallic lead frame and encapsulating with a resin substantially only on the side on which the semiconductor elements are mounted.

An object of the present invention is to attain good properties such as less warping after molding and soldering in the area mounting type semiconductor device and excellent reliability in soldering because of particularly good adhesiveness to the organic substrate.

Filed herewith are Tables 1, 2 and 3 which are pertinent in this regard. Table 1 relates to examples of the invention. References 1, 2, 3, 4, 5 and 6, mentioned in Table 2 are directed to epoxy resin compositions for general semiconductors which are not one side encapsulating type as in the present invention. Thus, the references do not contemplate the prevention of warping which is peculiar to one-sided encapsulation type configurations. In this regard, a skilled person in the art would not be readily lead to the present invention from the references.

The references 7 to 12 mentioned in Table 3 are directed to epoxy resin compositions for semiconductors which are one side encapsulating type. However, contrary to the assumptions in the Final Action that such resin compositions would inherently satisfy the three requirements a, b and c as defined in Claim 1, combinations of the resins specified in added Claims 8 to 11 described above are not disclosed or suggested in any of these references.

According to the present invention, all three requirements must be satisfied in order to obtain an epoxy resin composition and a semiconductor device which have less warping after molding and soldering in the so-called area mounting type semiconductor device and which have excellent reliability in soldering and the like because of particularly excellent adhesiveness to an organic substrate.

Even when the same kinds of epoxy resin, phenolic resin, curing accelerator and filler are used, good characteristics (e.g., releasability, flowing property, warping amount of package, soldering crack resistance, etc.) cannot be attained unless all three requirements are satisfied. This fact is proved by comparison of Examples 1, 2 and 6 with Comparative Examples 5 and 6, and comparison of Example 3 with Comparative Example 2. Thus, even if the same kinds of epoxy resin, phenolic resin, curing accelerator and filler are disclosed in the references, it cannot be concluded that characteristics equal to the present invention are attained in the reference.

Consequently, applicants respectfully submit that the references fail to anticipate or render obvious the present invention. There is no suggestion, teaching or motivation for a person skilled in the art to select the particular combination of components whereby they would satisfy the parameters a, b and c as specified in Claim 1 of this application.

Neither is there any suggestion of the success which applicants have obtained which is demonstrated by the data in the application. Consequently, applicants respectfully submit that the Final Action fails to establish that the claimed subject matter herein is unpatentable under 35 U.S.C. § 102 or 103.

Favorable action at the Examiner's earliest convenience is respectfully requested.

Respectfully submitted,

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Table 1

Summary of examples of present invention

	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6
Epoxy resin	Polyfunctional type	Polyfunctional type	Biphenyl type	Biphenyl type	Naphthol phenolic novolak type	Polyfunctional type
Curing agent	Polyfunctional type	Polyfunctional type	Phenolic phenyl aralkyl type	Naphthol phenyl aralkyl type	Naphthol phenyl aralkyl type	Polyfunctional type
Amount of filler (%)	83.25	83.30	91.25	87.20	87.30	87.30
Curing accelerator	TPP 0.15	TPP 0.10	TPP 0.15	TPP 0.20	TPP 0.10	TPP 0.10

Table 2

Summary of examples of references (1)

	Reference 1 (US '266)	Reference 2 (US '908)	Reference 3 (US '222)	Reference 4 (US '774)	Reference 5 (US '978)	Reference 6 (US '489)
Epoxy resin	Naphthol phenolic novolak type	Naphthol phenolic novolak type + (biphenyl type)	Biphenyl type	Biphenyl type	Polyfunc-tional type	Biphenyl type
Curing agent	Phenolic phenyl aralkyl type	Phenolic phenyl aralkyl type + naphthol phenolic novolak type	Phenolic phenyl aralkyl type + naphthol phenyl aralkyl type	Phenolic phenyl aralkyl type	Polyfunc-tional type	Phenolic phenyl aralkyl type

(continued)

Table 2 continued

Amount of filler (%)	83.3	79.0-82.5	89.4-94.3	70.7-81.0	85.4	86.0-92.0
Curing accelerator	TPP 0.07 + DBU 0.09	TPP 0.12-0.14	TPP 0.15-0.18	TPP 0.17, 0.25	TPP 0.04 + others 0.07	TPP 0.09-0.10
Reduction of warping in one-side encapsulating type	Not mentioned	Not mentioned	Not mentioned	Not mentioned	Mentioned	Not mentioned

Table 3 Summary of examples of references (2)

	Reference 7 (US '491)	Reference 8 (JP '444)	Reference 9 (JP '631)	Reference 10 (JP '490)	Reference 11 (JP '491)	Reference 12 (JP '938)
Epoxy resin	Biphenyl type	Polyfunctional type + biphenyl type	Polyfunctional type + biphenyl type	Polyfunctional type + (biphenyl type)	Polyfunctional type + (biphenyl type)	Polyfunctional type + (biphenyl type)
Curing agent	Special resin containing naphthol oxide	Polyfunctional type	Polyfunctional type	Polyfunctional type	Polyfunctional type	Polyfunctional type

(continued)

Table 3 CONTINUED

Amount of filler (%)	90.39-0.5	83.0	85.0	86.0	85.0	80.0-84.7
Curing accelerator	TPP-BQ 0.14	TPP 0.10	DBU 0.20	TPP 0.20	TPP 0.20	TPP 0.20
Reduction of warping in one-side encapsulating type	Mentioned	Mentioned	Mentioned	Mentioned	Mentioned	Mentioned